1) $\forall n \in \mathbb{N}^*$ $\quad \sqrt{n+1} > \sqrt{n}$

$$\Rightarrow \sqrt{n} + \sqrt{n+1} > 2\sqrt{n}$$

$$\Rightarrow \frac{1}{\sqrt{n} + \sqrt{n+1}} < \frac{1}{2\sqrt{n}}$$

$$\Rightarrow \boxed{u_n < \frac{1}{2\sqrt{n}} \quad \forall n \in \mathbb{N}^*}$$

Conclusion: $\forall n \in \mathbb{N}^*, \frac{1}{2\sqrt{n+1}} < u_n < \frac{1}{2\sqrt{n}}$

2) $\forall n \in \mathbb{N}^*, \frac{1}{2\sqrt{n+1}} < u_n < \frac{1}{2\sqrt{n}}$

or $\lim\limits_{n \to +\infty} \frac{1}{2\sqrt{n+1}} = 0$

et $\lim\limits_{n \to +\infty} \frac{1}{2\sqrt{n}} = 0$

D'où $\boxed{\lim\limits_{n \to +\infty} u_n = 0}$

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